

13 June 2014

Jacinto Soto  
Northern California Region  
Coastal Cleanup Operations Branch  
Department of Toxic Substances Control  
700 Heinz Avenue, Suite 200  
Berkeley, California 94710

**Subject: Soil Sampling Summary and Proposed Excavation Limits at PepsiCo Site  
GE Oakland Facility, 5441 International Blvd., Oakland, California**

Dear Mr. Soto:

On behalf of General Electric Company (GE), Geosyntec Consultants (Geosyntec) prepared this letter report to describe the results of pre-excavation soil investigation and proposed limits of excavations to be conducted to address soil containing polychlorinated biphenyls (PCBs) on the PepsiCo Site located at 5625 International Boulevard in Oakland, California (Figure 1). The soil investigation was performed as part of the approved Remedial Action Plan (RAP) for the GE Site located at 5441 International Boulevard in response to comments received from PepsiCo during the public comment period for the RAP. The PepsiCo Site abuts the southern side of the GE facility. The locations of the GE and PepsiCo Sites are shown on Figure 1.

**1. BACKGROUND**

Based on their review of the Draft Remedial Action Plan (RAP) for the GE property and results of soil samples collected from the PepsiCo property, the California Department of Toxic Substances Control (DTSC) requested that additional soil samples be taken on the GE-PepsiCo property boundary as part of the remedial design phase of the Site cleanup plan.

In accordance with DTSC's request, a Work Plan<sup>1</sup> was submitted to DTSC presenting the scope of proposed additional characterization of PCBs in soil at the GE-PepsiCo boundary and proposing excavation of soil containing PCBs exceeding 1 milligram per kilogram (mg/kg). The

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<sup>1</sup> Geosyntec Consultants, 2012, Revised Work Plan for Additional Soil Investigation and Soil Removal at PepsiCo Site, 25 April

final Work Plan was approved by DTSC in a 4 September 2012 letter and by the US Environmental Protection Agency (USEPA) in a 23 May 2013 letter entitled “*USEPA Conditional Approval of TSCA Application for Risk Based PCB Cleanup*.” In addition, USEPA approved placement of the soil to be excavated from the PepsiCo Site beneath the cap to be constructed at the GE Site.

## **2. SUMMARY OF PCB INVESTIGATIONS AT GE-PEPSICO BOUNDARY**

Figure 2 illustrates the GE and PepsiCo Sites and identifies the area of investigation and proposed soil removal on the PepsiCo property. Both PepsiCo and GE have completed soil investigations in this area, as summarized below.

### **2.1 PepsiCo Soil Investigation**

PepsiCo retained OTIE to collect additional soil samples at 14 locations on the northern boundary of its site for PCB analysis. Soil samples were collected on 3 May 2011 at depth intervals of 0 to 2 feet and 4 to 6 feet. The locations of the samples are shown on Figure 2, labeled as OAKSB samples. The samples were analyzed for PCB congeners using EPA Method 8082. The analytical results for these samples are summarized on Figure 2. Only Arochlor 1260 PCBs were detected at low levels on the PepsiCo Site. Only three of the 14 samples contained concentrations of PCBs above 1 mg/kg with the maximum PCB concentration detected at 4 mg/kg. PCB concentrations above 1 mg/kg were limited to the 0 to 2-foot samples.

### **2.2 GE Soil Investigations**

Based on the previous samples collected by PepsiCo, additional soil sampling was performed by Geosyntec on behalf of GE in accordance with the DTSC- and USEPA-approved work plan to further define the limits of PCBs in soil at the PepsiCo Site. The sampling program included additional sampling locations and provisional sampling locations where samples were collected and put on hold at the laboratory pending results of the pre-determined samples. The objective of this sampling was to delineate and confirm the limits of PCB concentrations above 1 mg/kg to eliminate the need for post-excavation confirmation sampling and allow backfilling to proceed immediately following impacted soil removal. If any of the pre-determined samples contained PCBs above 1 mg/kg, the nearby provisional sample was analyzed to establish the removal limits. All sampling locations were marked in the field and surveyed.

### **2.2.1 Soil Sampling Methods**

Using a truck-mounted 6600 Geoprobe rig, a 2.5-inch diameter acetate sleeve was driven to depth in order to collect samples from the deeper soil intervals. All samples were immediately put on ice and couriered to Curtis & Tompkins where the samples were extracted by EPA method 3540C and analyzed for PCBs by EPA method 8082. Borings were backfilled with grout and soil cuttings were placed in DOT drums and stored at the GE Site pending analytical results. The ground surface was restored to its previous condition.

### **2.2.2 Permitting**

Borehole drilling permits were obtained from the Alameda County Public Works Agency. Copies of these permits are provided in Appendix A.

### **2.2.3 Laboratory Analysis**

Soil samples were analyzed by Curtis & Tompkins laboratory where they were extracted by EPA method 3540C and analyzed for PCBs by EPA method 8082. Analytical laboratory reports are provided in Appendix B.

## **3. PROPOSED EXCAVATION LIMITS**

Figure 2 summarizes the sample locations and the results of the PCB investigations at the two areas along the GE-PepsiCo boundary where PCBs were detected above 1 mg/kg. Figures 3 and 4 provide further detail of these areas and illustrate the proposed excavation boundaries in each area. Based on the results of investigations, concentrations of PCBs above 1 mg/kg were not detected at any of the samples collected at 4 feet below ground surface (bgs). Therefore, the excavation will not extend below a depth of 4 feet bgs, with one exception as discussed below. In 2010, PepsiCo installed a high pressure fire line along the property boundary, which is located within both excavation areas. The fire line was reportedly bedded in clean imported fill material. Therefore, if the fire line bedding material is encountered, the excavation will be terminated at the top of the bedding material. The total area to be excavated is approximately 2,800 square feet and the total volume to be excavated is approximately 11,200 cubic feet.

Pursuant to the approved work plan, Geosyntec has evaluated the current sampling results to determine if the results from the proposed excavation limits meet the cleanup objectives. Consistent with the approach used for the 2001 and 2005 residential cleanups and with USEPA

guidance<sup>2,3</sup>, Geosyntec used the current ProUCL statistical software available from the USEPA<sup>4</sup> (ProUCL Version 5.0.00), to calculate the 95% upper confidence limit (95% UCL) of the mean PCB concentrations in soil samples collected at the proposed excavation boundaries and in the area outside the excavation boundaries to determine the proposed excavation limits would result in an average PCB concentration less than 1 mg/kg. To calculate the post-excavation 95% UCL means, all soil data collected between 0 and 4 feet along the excavation area boundaries were included in the data sets. The data were separated into three sets, one for the East Excavation area, one for the West Excavation area, and one for the area outside the proposed excavation boundaries. The ProUCL output files are provided in Appendix C.

The results of the analysis indicate that the 95% UCL mean concentrations for PCBs for both the east and west excavation boundaries (0.452 mg/kg and 0.115 mg/kg) are well below the cleanup level of 1 mg/kg. The 95%UCL mean PCB concentration (0.253 mg/kg) outside the proposed excavation areas is also below the cleanup level of 1 mg/kg.

#### **4. REPORTING**

An Excavation Completion Report will be prepared by a California Registered Professional Engineer (PE) for submittal to DTSC. The report will also be provided to USEPA and PepsiCo. The completion report will include:

- a description of the excavation activities; and
- a drawing depicting the extent of the excavations.

GE is currently obtaining permits and procuring Contractors to implement the Site remedy, including excavation of soils on the PepsiCo property. We anticipate beginning remedy implementation in August 2014.

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<sup>2</sup> USEPA. 2002. Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, Report No. OSWER 9285.6-10. December

<sup>3</sup> USEPA. 1989. Methods for Evaluating Attainment of Cleanup Standards. Volume 1: Soils and Solid Media. Office of Policy, Planning, and Evaluation. Publication EPA/230/2-89/042. February.

<sup>4</sup> USEPA, 2013. ProUCL Version 5.0 Technical Guide. Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. EPA/600/R-07/041. September

Mr. Jacinto Soto  
13 June 2014  
Page 5

Please feel free to call the undersigned if you have any questions or comments.

Sincerely,

A handwritten signature in blue ink that reads "Nancy T. Bice". The signature is written in a cursive, flowing style.

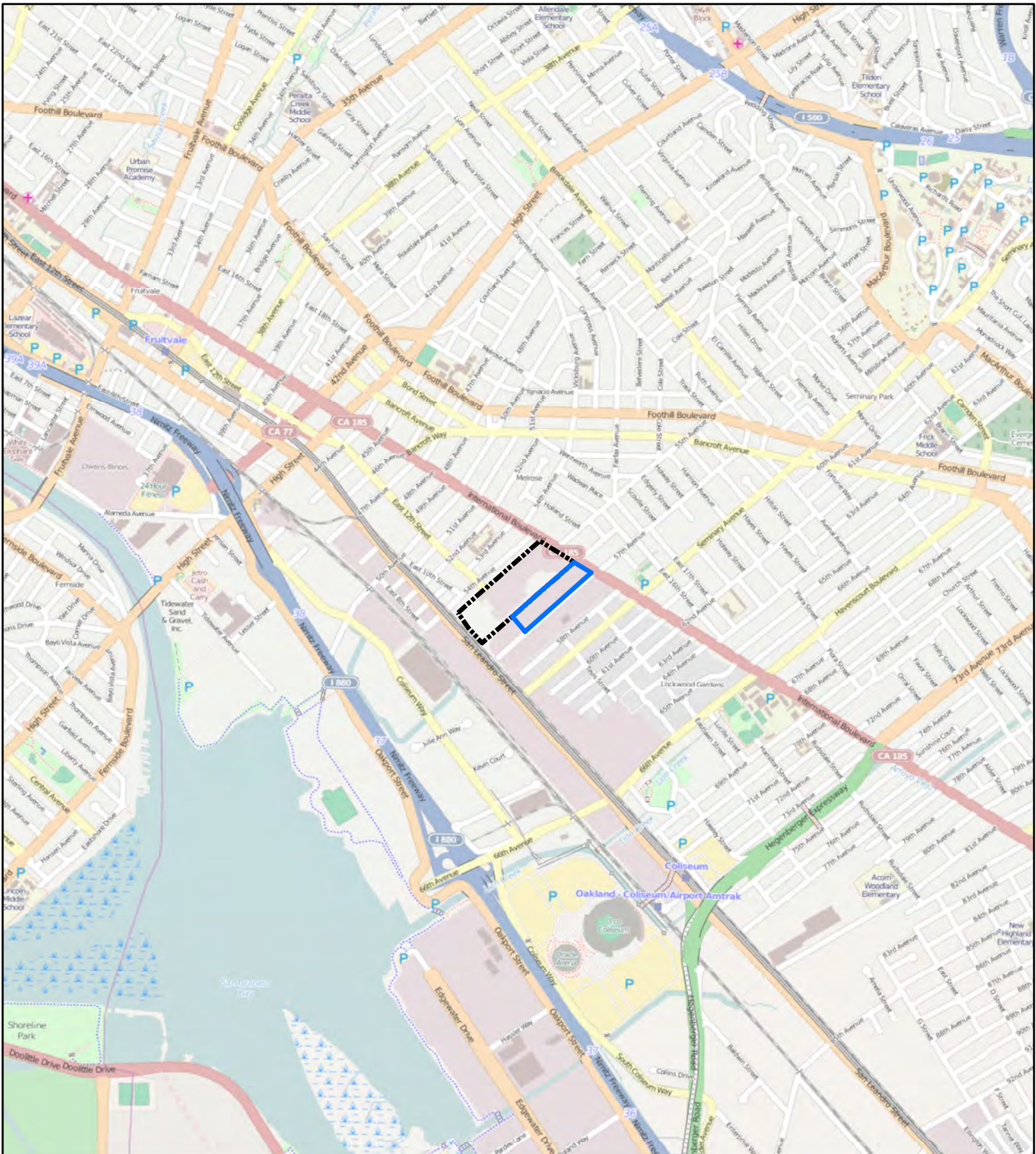
Nancy T. Bice, P.G., C.E.G.  
Principal

Attachments: Figure 1 – Site Location  
Figure 2 – Summary of PCB Investigation  
Figure 3 – West Excavation PCB Results  
Figure 4 – East Excavation PCB Results  
Appendix A - Borehole Permits  
Appendix B - Laboratory Analytical  
Appendix C - ProUCL Output Files

Copies to: Lance Hauer, GE  
Steve Armann, USEPA Region 9

## **FIGURES**





## Legend



GE Site Boundary



PepsiCo Site Boundary



© OpenStreetMap (and) contributors, CC-BY-SA

0 2,000 Feet

## Site Location Map

General Electric Company  
5441 International Boulevard  
Oakland, California, 94601

**Geosyntec**  
consultants

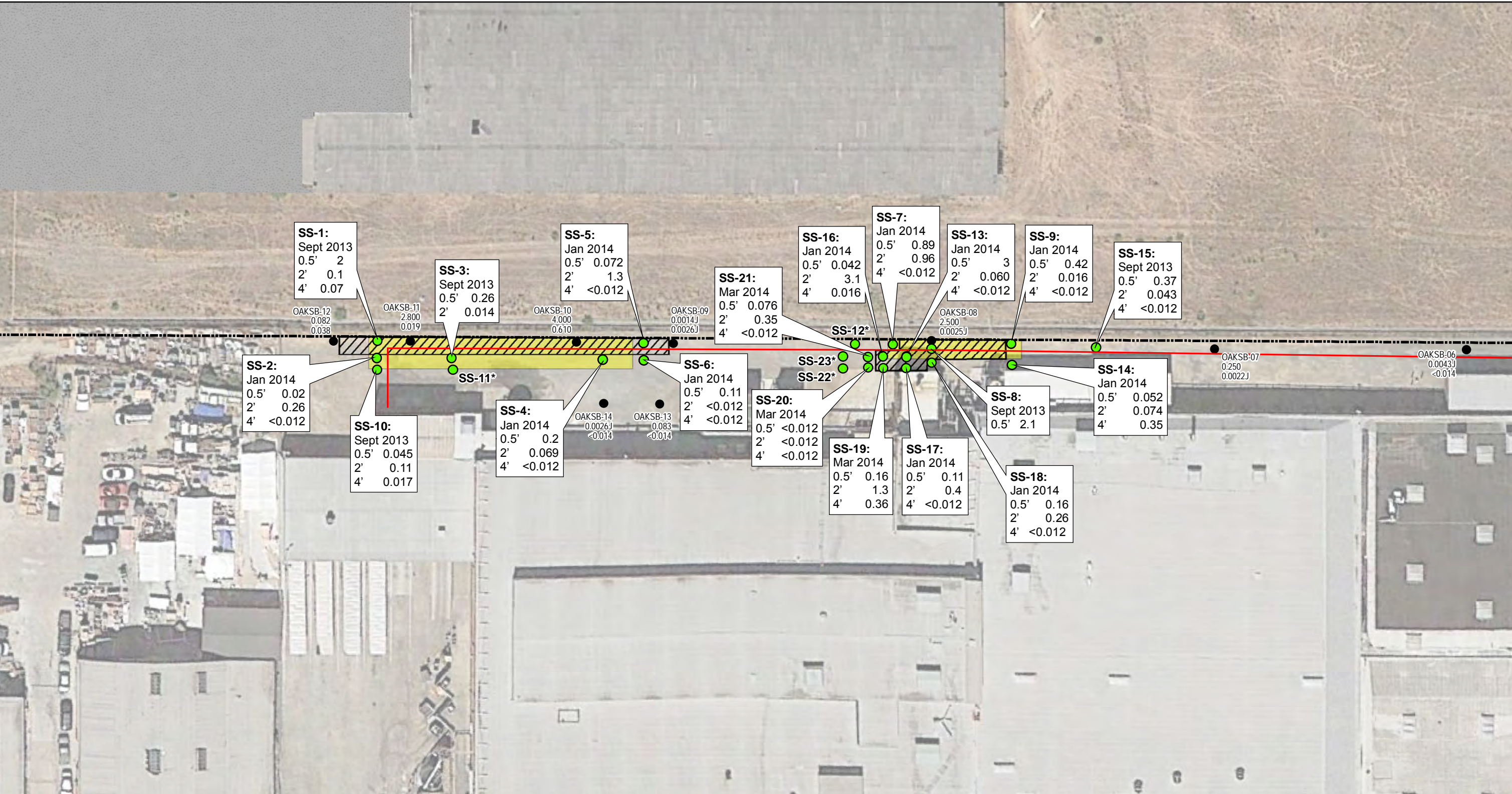
**Figure**

**1**

WR1774A

May 2014





**Legend**

- GE Soil Sample Collected  
Sept 2013 - Mar 2014 (0.5', 2', and 4' bgs)
- PepsiCo Soil Sample Collected May 2011 (Approximate Location)
- ▨ Proposed Excavation
- Original Proposed Excavation
- GE-PepsiCo Property Boundary

Soil Sample Location -  
Date -  
Sample Depth (ft bgs) -

<b>SS-1:</b>
Sept 2013
0.5' 2
2' 0.1
4' 0.07

- PCBs (AROCOR 1260)  
- Results in mg/kg

**Notes:**  
\* = sample not analyzed  
PCBs = Polychlorinated biphenyls  
ft bgs = feet below ground surface  
mg/kg = milligram per kilogram  
Imagery: Google Earth Pro, 28 August 2012

OAKSB-06 - Soil Sample Location  
0.0043J - PCB Reading (mg/kg) @ 0-2'  
<0.014 - PCB Reading (mg/kg) @ 4-6'

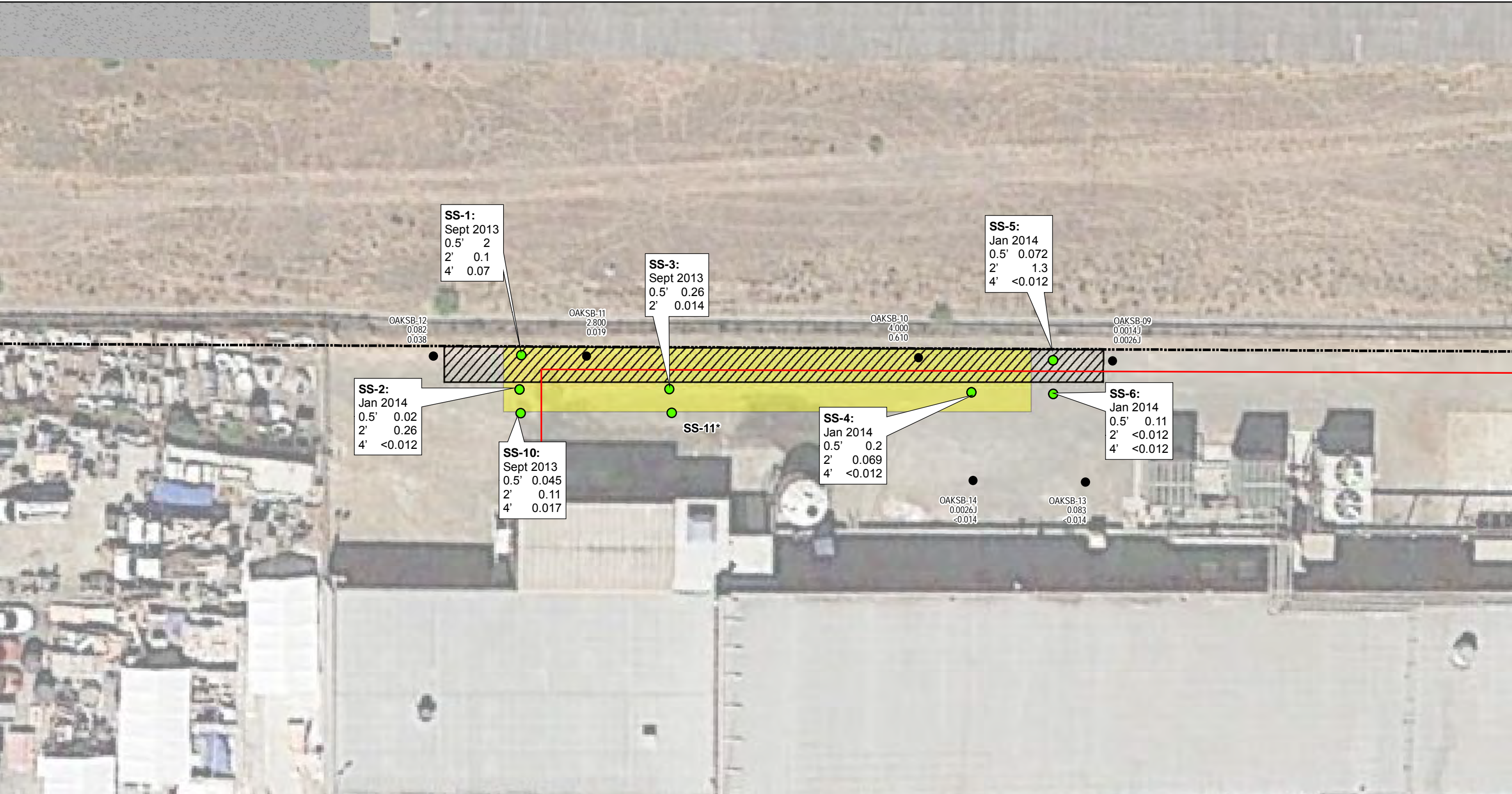
**Summary of PCB Investigations  
at GE-PepsiCo Boundary**  
5625 International Blvd., Oakland, CA  
PepsiCo Company

**Geosyntec**  
consultants

Figure  
**2**

Oakland June 2014





**Legend**

- GE Soil Sample Collected  
Sept 2013 - Mar 2014 (0.5', 2', and 4' bgs)
- PepsiCo Soil Sample Collected May 2011 (Approximate Location)
- ▨ Proposed Excavation
- Original Proposed Excavation
- GE-PepsiCo Property Boundary

— Approximate Location of 10 inch Fire Line

Soil Sample Location -  
Date -  
Sample Depth (ft bgs) -

<b>SS-1:</b>	Sept 2013	0.5' 2	2' 0.1	4' 0.07
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OAKSB-11 - Soil Sample Location  
2,800 - PCB Reading (mg/kg) @ 0-2'  
0.019 - PCB Reading (mg/kg) @ 4-6'

**Notes:**  
\* = sample not analyzed  
PCBs = Polychlorinated biphenyls  
ft bgs = feet below ground surface  
mg/kg = milligram per kilogram  
Imagery: Google Earth Pro, 28 August 2012

25 12.5 0 25 Feet

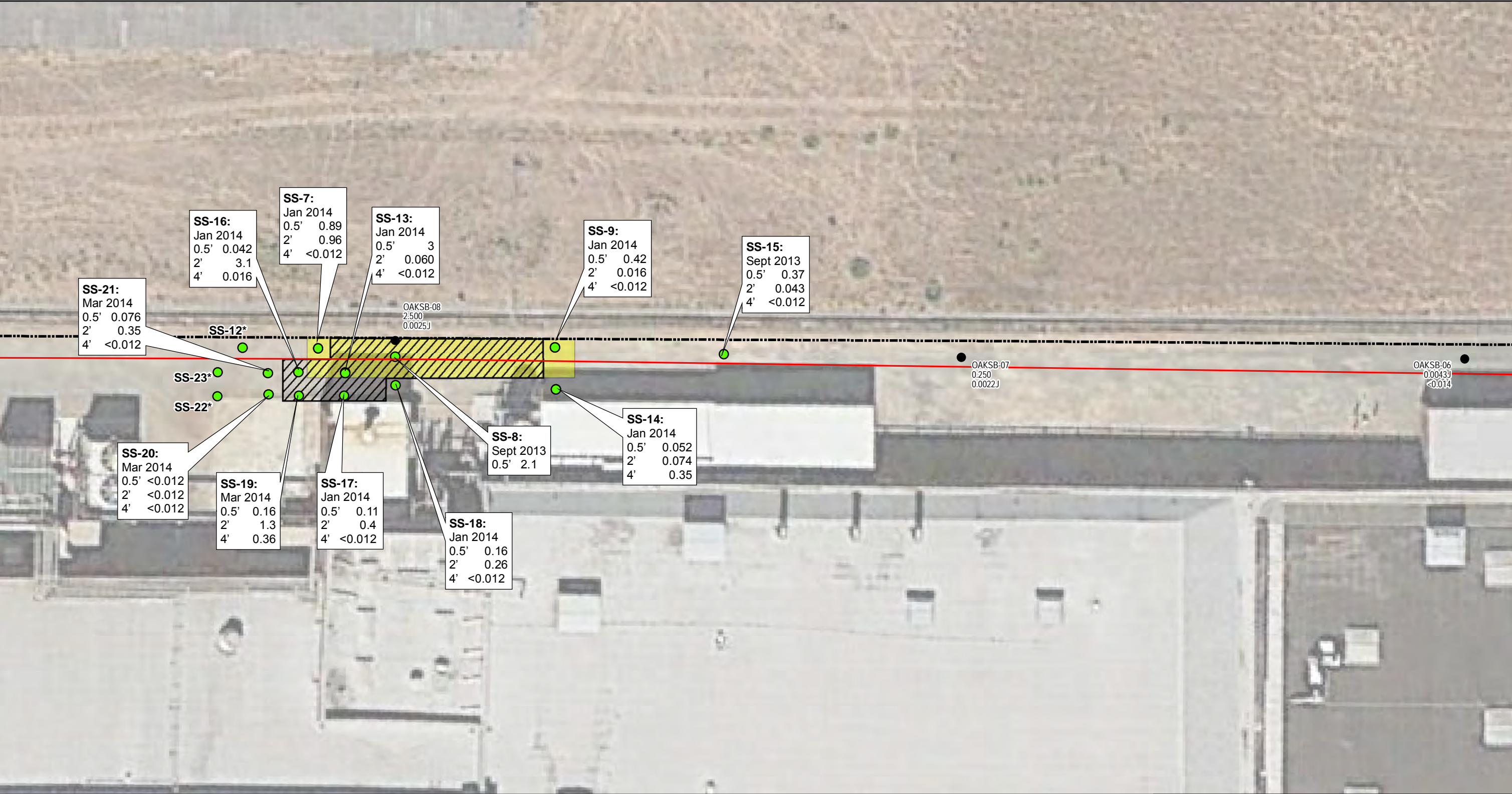
**West Excavation Detail and PCB Results  
at GE-PepsiCo Boundary**  
5625 International Blvd., Oakland, CA  
PepsiCo Company

**Geosyntec**  
consultants

Oakland June 2014

Figure  
**3**





**Legend**

- GE Soil Sample Collected  
Sept 2013 - Mar 2014 (0.5', 2', and 4' bgs)
- PepsiCo Soil Sample Collected May 2011 (Approximate Location)
- ▨ Proposed Excavation
- Original Proposed Excavation
- GE-PepsiCo Property Boundary

Soil Sample Location - **SS-7:**  
Date - Jan 2014  
Sample Depth (ft bgs) - 0.5' 0.89  
2' 0.96  
4' <0.012

- PCBs (AROCOR 1260)  
- Results in mg/kg

OAKSB-06 - Soil Sample Location  
0.0043J - PCB Reading (mg/kg) @ 0-2'  
<0.014 - PCB Reading (mg/kg) @ 4-6'

**Notes:**  
\* = sample not analyzed  
PCBs = Polychlorinated biphenyls  
ft bgs = feet below ground surface  
mg/kg = milligram per kilogram  
Imagery: Google Earth Pro, 28 August 2012

25 12.5 0 25 Feet

**East Excavation Detail and PCB Results  
at GE-PepsiCo Boundary**

5625 International Blvd., Oakland, CA  
PepsiCo Company

**Geosyntec**  
consultants

Oakland

June 2014

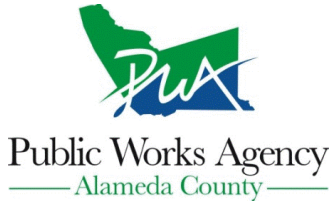
Figure  
**4**

## **APPENDIX A**

### **BOREHOLE PERMITS**



# Alameda County Public Works Agency - Water Resources Well Permit



399 Elmhurst Street  
Hayward, CA 94544-1395  
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 01/14/2014 By jamesy

Permit Numbers: W2014-0019  
Permits Valid from 01/23/2014 to 01/24/2014

Application Id: 1389637098498  
Site Location: 5625 International Blvd.

City of Project Site:Oakland

Project Start Date: 01/23/2014  
Assigned Inspector: Contact Balance Hydrologics, Inc at (510) 473-5663 or acwells@balancehydro.com

Completion Date:01/24/2014

Applicant: Geosyntec - Nathan Mullaugh  
595 Market St, Ste 610, San Francisco, CA 94105  
Property Owner: PepsiCo PepsiCo  
5625 international Blvd, Oakland, CA 94621  
Client: Lance Hauer  
nmullaugh@geosyntec.com, King of Prussia, PA 19406

Phone: 510-285-2742

Phone: --

Phone: --

Receipt Number: WR2014-0006 Total Due: \$265.00  
Payer Name : Nathan Mullaugh Total Amount Paid: \$265.00  
Paid By: MC PAID IN FULL

## Works Requesting Permits:

Borehole(s) for Investigation-Environmental/Monitorinig Study - 14 Boreholes

Driller: Gregg Drilling - Lic #: 485065 - Method: DP

Work Total: \$265.00

### Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2014-0019	01/14/2014	04/23/2014	14	2.00 in.	4.00 ft

### Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.
2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.
3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.
4. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
5. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.

6. NOTE:

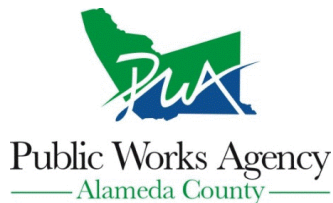
## **Alameda County Public Works Agency - Water Resources Well Permit**

Under California laws, the owner/operator are responsible for reporting the contamination to the governmental regulatory agencies under Section 25295(a). The owner/operator is liable for civil penalties under Section 25299(a)(4) and criminal penalties under Section 25299(d) for failure to report a leak. The owner/operator is liable for civil penalties under Section 25299(b)(4) for knowing failure to ensure compliance with the law by the operator. These penalty provisions do not apply to a potential buyer.

7. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

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# Alameda County Public Works Agency - Water Resources Well Permit



399 Elmhurst Street  
Hayward, CA 94544-1395  
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 03/24/2014 By jamesy

Permit Numbers: W2014-0270  
Permits Valid from 03/31/2014 to 04/01/2014

Application Id: 1395089035081  
Site Location: 5625 International Blvd.  
Project Start Date: 03/31/2014  
Assigned Inspector: Contact Steve Miller at (510) 670-5517 or stevem@acpwa.org  
City of Project Site: Alameda  
Completion Date: 04/01/2014

Applicant: Geosyntec Consultants - Ehsan Rasa  
1111 Broadway, 6th floor, Oakland, CA 94607  
Phone: 510-285-2721  
Property Owner: Pepsi Co  
5625 International Blvd, Oakland, CA 94621  
Phone: --  
Client: Lance Hauer  
nmullaugh@geosyntec.com, King of Prussia, King of Prussia, PA 19406  
Phone: --

Receipt Number: WR2014-0103  
Payer Name : Geosyntec Consultants  
Total Due: \$265.00  
Total Amount Paid: \$265.00  
Paid By: MC  
PAID IN FULL

## Works Requesting Permits:

Borehole(s) for Geo Probes-Sampling 24 to 72 hours only - 3 Boreholes  
Driller: Gregg Drilling - Lic #: 485065 - Method: DP

Work Total: \$265.00

## Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2014-0270	03/24/2014	06/29/2014	3	2.00 in.	4.00 ft

## Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.
2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.
3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.
4. Applicant shall contact Steve Miller for an inspection time at (510) 670-5517 or email to stevem@acpwa.org at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
5. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or



## **Alameda County Public Works Agency - Water Resources Well Permit**

waterways or be allowed to move off the property where work is being completed.

6. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.

**7. NOTE:**

Under California laws, the owner/operator are responsible for reporting the contamination to the governmental regulatory agencies under Section 25295(a). The owner/operator is liable for civil penalties under Section 25299(a)(4) and criminal penalties under Section 25299(d) for failure to report a leak. The owner/operator is liable for civil penalties under Section 25299(b)(4) for knowing failure to ensure compliance with the law by the operator. These penalty provisions do not apply to a potential buyer.

8. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

9. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

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**APPENDIX B**

**LABORATORY ANALYTICAL**









Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 249803  
ANALYTICAL REPORT**

Geosyntec Consultants  
1111 Broadway  
Oakland, CA 94607

Project : WR1774  
Location : GE Oakland  
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
SS10-0.5	249803-001
SS10-2	249803-002
SS10-4	249803-003
SS15-0.5	249803-004
SS15-2	249803-005
SS15-4	249803-006
SS14-0.5	249803-007
SS13-0.5	249803-008

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: \_\_\_\_\_

Will S Rice  
Project Manager  
will.rice@ctberk.com

Date: 12/04/2013

## CASE NARRATIVE

Laboratory number: 249803  
Client: Geosyntec Consultants  
Project: WR1774  
Location: GE Oakland  
Request Date: 10/11/13  
Samples Received: 09/23/13

This data package contains sample and QC results for eight soil samples, requested for the above referenced project on 10/11/13. The samples were received cold and intact. Revised 12/04/13 to correct hold time.

### PCBs (EPA 8082):

All samples underwent sulfuric acid cleanup using EPA Method 3665A. All samples underwent sulfur cleanup using the copper option in EPA Method 3660B. High responses were observed for Aroclor-1016 and Aroclor-1260 in the CCV analyzed 10/16/13 06:11; affected data was qualified with "b". No other analytical problems were encountered.

249803

**Subject:** RE: WR1774 - C&T Data (249292)  
**From:** Nate Mullaugh <NMullaugh@Geosyntec.com>  
**Date:** 10/11/2013 9:55 AM  
**To:** "will.rice@ctberk.com" <will.rice@ctberk.com>

Will – can you please run the following samples for PCBs via 8082 and extracted by 3540C:

- SS10-0.5'
- SS10-2'
- SS10-4'
- SS13-0.5'
- SS14-0.5'
- SS15-0.5'
- SS15-2'
- SS15-4'

Thanks - Nate

**From:** Will S Rice [mailto:will.rice@ctberk.com]  
**Sent:** Thursday, October 10, 2013 6:25 PM  
**To:** Nate Mullaugh  
**Subject:** WR1774 - C&T Data (249292)

Hi Nate,

Please find attached the following files:

- Invoice
- PDF Deliverable
- C&T minimal EDD (249292\_barebones.zip)

You may also access this data at <https://labline.ctberk.com/>  
Email was also sent to: [CWildman@Geosyntec.com](mailto:CWildman@Geosyntec.com)

C&T sends its e-reports via the Internet as Portable Document Format (PDF) files. Reports in this format, when accompanied by a signed cover page, are considered official reports. **No hardcopy reports will be sent either by fax or U.S. Postal Service unless otherwise requested.** You may distribute your PDF files electronically or as printed hardcopies, as long as they are distributed in their entirety.







## COOLER RECEIPT CHECKLIST



Curtis &amp; Tompkins, Inc.

Login # 249292 Date Received 9/23/13 Number of coolers 1  
 Client Gensyntec Project WR1774A

Date Opened 9/24/13 By (print) ML (sign) [Signature]  
 Date Logged in 9/24/13 By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) \_\_\_\_\_ YES NO  
 Shipping info \_\_\_\_\_

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples NO  
 How many \_\_\_\_\_ Name \_\_\_\_\_ Date \_\_\_\_\_

2B. Were custody seals intact upon arrival? \_\_\_\_\_ YES NO N/A

3. Were custody papers dry and intact when received? \_\_\_\_\_ YES NO YES

4. Were custody papers filled out properly (ink, signed, etc)? \_\_\_\_\_ YES NO YES

5. Is the project identifiable from custody papers? (If so fill out top of form) \_\_\_\_\_ YES NO YES

6. Indicate the packing in cooler: (if other, describe) \_\_\_\_\_

☐ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None  
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: \* Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) 4.2

☐ Samples Received on ice & cold without a temperature blank; temp. taken with IR gun

☒ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? \_\_\_\_\_ YES NO

If YES, what time were they transferred to freezer? \_\_\_\_\_

9. Did all bottles arrive unbroken/unopened? \_\_\_\_\_ YES NO YES

10. Are there any missing / extra samples? \_\_\_\_\_ YES NO NO

11. Are samples in the appropriate containers for indicated tests? \_\_\_\_\_ YES NO YES

12. Are sample labels present, in good condition and complete? \_\_\_\_\_ YES NO YES

13. Do the sample labels agree with custody papers? \_\_\_\_\_ YES NO YES

14. Was sufficient amount of sample sent for tests requested? \_\_\_\_\_ YES NO YES

15. Are the samples appropriately preserved? \_\_\_\_\_ YES NO N/A

16. Did you check preservatives for all bottles for each sample? \_\_\_\_\_ YES NO N/A

17. Did you document your preservative check? \_\_\_\_\_ YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? \_\_\_\_\_ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? \_\_\_\_\_ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? \_\_\_\_\_ YES NO N/A

21. Was the client contacted concerning this sample delivery? \_\_\_\_\_ YES NO NO

If YES, Who was called? \_\_\_\_\_ By \_\_\_\_\_ Date: \_\_\_\_\_

## COMMENTS

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Rev 10, 11/11



Polychlorinated Biphenyls (PCBs)			
Lab #:	249803	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	09/23/13
Units:	ug/Kg	Received:	09/23/13
Basis:	as received	Prepared:	10/14/13
Batch#:	204012		

Field ID:	SS10-0.5	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	10/19/13
Lab ID:	249803-001		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	45	12

Surrogate	%REC	Limits
TCMX	80	66-142
Decachlorobiphenyl	66	43-139

Field ID:	SS10-2	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	10/19/13
Lab ID:	249803-002		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	110	12

Surrogate	%REC	Limits
TCMX	96	66-142
Decachlorobiphenyl	70	43-139

DO= Diluted Out  
ND= Not Detected  
RL= Reporting Limit

### Polychlorinated Biphenyls (PCBs)

Lab #:	249803	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	09/23/13
Units:	ug/Kg	Received:	09/23/13
Basis:	as received	Prepared:	10/14/13
Batch#:	204012		

Field ID:	SS10-4	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	10/19/13
Lab ID:	249803-003		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	17	12

Surrogate	%REC	Limits
TCMX	94	66-142
Decachlorobiphenyl	85	43-139

Field ID:	SS15-0.5	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	10/19/13
Lab ID:	249803-004		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	370	12

Surrogate	%REC	Limits
TCMX	110	66-142
Decachlorobiphenyl	93	43-139

DO= Diluted Out  
 ND= Not Detected  
 RL= Reporting Limit

Polychlorinated Biphenyls (PCBs)			
Lab #:	249803	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	09/23/13
Units:	ug/Kg	Received:	09/23/13
Basis:	as received	Prepared:	10/14/13
Batch#:	204012		

Field ID: SS15-2 Diln Fac: 1.000  
 Type: SAMPLE Analyzed: 10/19/13  
 Lab ID: 249803-005

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	43	12

Surrogate	%REC	Limits
TCMX	109	66-142
Decachlorobiphenyl	103	43-139

Field ID: SS15-4 Diln Fac: 1.000  
 Type: SAMPLE Analyzed: 10/19/13  
 Lab ID: 249803-006

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	102	66-142
Decachlorobiphenyl	105	43-139

DO= Diluted Out  
 ND= Not Detected  
 RL= Reporting Limit  
 Page 3 of 4



### Polychlorinated Biphenyls (PCBs)

Lab #:	249803	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	09/23/13
Units:	ug/Kg	Received:	09/23/13
Basis:	as received	Prepared:	10/14/13
Batch#:	204012		

Field ID: SS14-0.5      Diln Fac: 1.000  
 Type: SAMPLE      Analyzed: 10/19/13  
 Lab ID: 249803-007

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	52	12

Surrogate	%REC	Limits
TCMX	96	66-142
Decachlorobiphenyl	73	43-139

Field ID: SS13-0.5      Diln Fac: 20.00  
 Type: SAMPLE      Analyzed: 10/22/13  
 Lab ID: 249803-008

Analyte	Result	RL
Aroclor-1016	ND	170
Aroclor-1221	ND	330
Aroclor-1232	ND	170
Aroclor-1242	ND	170
Aroclor-1248	ND	170
Aroclor-1254	ND	170
Aroclor-1260	3,000	170

Surrogate	%REC	Limits
TCMX	DO	66-142
Decachlorobiphenyl	DO	43-139

Type: BLANK      Diln Fac: 1.000  
 Lab ID: QC711755      Analyzed: 10/16/13

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	112	66-142
Decachlorobiphenyl	83	43-139

DO= Diluted Out  
 ND= Not Detected  
 RL= Reporting Limit

## Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	249803	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC711756	Batch#:	204012
Matrix:	Soil	Prepared:	10/14/13
Units:	ug/Kg	Analyzed:	10/16/13

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	165.1	191.2 b	116	64-143
Aroclor-1260	165.1	182.9 b	111	58-146

Surrogate	%REC	Limits
TCMX	113	66-142
Decachlorobiphenyl	103	43-139

b= See narrative

## Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	249803	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Field ID:	ZZZZZZZZZZ	Batch#:	204012
MSS Lab ID:	249717-007	Sampled:	10/07/13
Matrix:	Soil	Received:	10/09/13
Units:	ug/Kg	Prepared:	10/14/13
Basis:	as received	Analyzed:	10/16/13
Diln Fac:	1.000		

Type: MS Lab ID: QC711757

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1016	<2.920	164.9	202.2 b	123	58-155
Aroclor-1260	<0.9567	164.9	195.3 b	118	35-159

Surrogate	%REC	Limits
TCMX	118	66-142
Decachlorobiphenyl	116	43-139

Type: MSD Lab ID: QC711758

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	166.4	179.9 b	108	58-155	13	44
Aroclor-1260	166.4	177.9 b	107	35-159	10	53

Surrogate	%REC	Limits
TCMX	104	66-142
Decachlorobiphenyl	109	43-139

b= See narrative

RPD= Relative Percent Difference





**Curtis & Tompkins, Ltd.**  
Analytical Laboratories, Since 1878





Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 252455**  
**ANALYTICAL REPORT**

Geosyntec Consultants  
1111 Broadway  
Oakland, CA 94607

Project : WR1774  
Location : GE Oakland  
Level : II

<u>Sample ID</u>	<u>Lab ID</u>	<u>Sample ID</u>	<u>Lab ID</u>
SS_2-2	252455-001	SS_14-4	252455-014
SS_2-4	252455-002	SS_9-2	252455-015
SS_4-2	252455-003	SS_9-4	252455-016
SS_4-4	252455-004	SS_16-0.5	252455-017
SS_6-2	252455-005	SS_16-2	252455-018
SS_6-4	252455-006	SS_16-4	252455-019
SS_5-2	252455-007	SS_17-0.5	252455-020
SS_5-4	252455-008	SS_17-2	252455-021
SS_13-2	252455-009	SS_17-4	252455-022
SS_13-4	252455-010	SS_18-0.5	252455-023
SS_7-2	252455-011	SS_18-2	252455-024
SS_7-4	252455-012	SS_18-4	252455-025
SS_14-2	252455-013	EQUIP-BLANK	252455-026

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: \_\_\_\_\_

Date: 01/30/2014

Will S Rice  
Project Manager  
will.rice@ctberk.com

NELAP # 01107CA

## CASE NARRATIVE

Laboratory number: 252455  
Client: Geosyntec Consultants  
Project: WR1774  
Location: GE Oakland  
Request Date: 01/23/14  
Samples Received: 01/23/14

This data package contains sample and QC results for twenty five soil samples and one water sample, requested for the above referenced project on 01/23/14. The samples were received cold and intact.

### PCBs (EPA 8082) Water:

All samples underwent sulfuric acid cleanup using EPA Method 3665A. All samples underwent sulfur cleanup using the copper option in EPA Method 3660B. No analytical problems were encountered.

### PCBs (EPA 8082) Soil:

All samples underwent sulfuric acid cleanup using EPA Method 3665A. All samples underwent sulfur cleanup using the copper option in EPA Method 3660B. High responses were observed for Aroclor-1016 and Aroclor-1260 in the CCV analyzed 01/28/14 08:44, the CCV analyzed 01/29/14 08:43, and the CCV analyzed 01/29/14 13:16; affected data was qualified with "b". No other analytical problems were encountered.

Page 2 of 2  
Chain of Custody #

**ct** **Curtis & Tompkins Laboratories**  
**ENVIRONMENTAL ANALYTICAL TESTING LABORATORY**  
*In Business Since 1878*

2323 Fifth Street  
Berkeley, CA 94710

Project No: WR1774A/06  
 Project Name: Grass Oakland  
 Project P. O. No: WR1774A/06  
 EDD Format: Report Level ☐ I ☐ II ☐ III ☐ IV  
 Turnaround Time: ☐ RUSH ☐ Standard  
 Sampler: Ehsan Rusa  
 Report To: Norte Mullaugh  
 Company: Geosyntec  
 Telephone: 50-285-2721  
 Email: r.rusa@geosyntec.com

Turnaround Time: ☐ RUSH ☐ Standard Email: vasa@geosyntec.com

Lab No.	Sample ID.	SAMPLING		MATRIX	# of Containers	CHEMICAL PRESERVATIVE								
		Date Collected	Time Collected			Water	Solid							
14	SS-14-4	<del>12/23/14</del>	1250	X	1					HCl	H2SO4	HNO3	NaOH	None
15	SS-9-2	1/23/14	1310	X	1									X
16	SS-9-4		1310	X	1									X
17	SS-16-0.5		1325	X	1									X
18	SS-16-2		1325	X	1									X
19	SS-16-4		1325	X	1									X
20	SS-17-0.5		1410	X	1									X
21	SS-17-2		1410	X	1									X
22	SS-17-4		1410	X	1									X
23	SS-18-0.5		1340	X	1									X
24	SS-18-2		1340	X	1									X
25	SS-18-4		1340	X	1									X
26	EQUIP-BLANK	✓	1420	X	1									X

Notes: Analyze for PCBs by  
EPA 8082  
Extraction method  
EPA 3540C

RELINQUISHED BY: 123 600  
DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

RECEIVED BY:	DATE:	TIME:
W. J. F.	1/23	16:00
DATE:	TIME:	
DATE:	TIME:	

ANALYTICAL REQUEST

C&amp;T LOGIN # 252455

Phone (510) 486-0900  
Fax (510) 486-0532

Project No: WR1774A/06  
 Project Name: Grass Oakland  
 Project P. O. No: WR1774A/06  
 EDD Format: Report Level ☐ I ☐ II ☐ III ☐ IV  
 Turnaround Time: ☐ RUSH ☐ Standard  
 Sampler: Ehsan Rusa  
 Report To: Norte Mullaugh  
 Company: Geosyntec  
 Telephone: 50-285-2721  
 Email: r.rusa@geosyntec.com

Turnaround Time: ☐ RUSH ☐ Standard Email: vasa@geosyntec.com

RELINQUISHED BY: 123 600  
DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

RECEIVED BY:	DATE:	TIME:
W. J. F.	1/23	16:00
DATE:	TIME:	
DATE:	TIME:	





# COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 252455 Date Received 4/23/14 Number of coolers 2  
 Client GEOSYNTEC Project GIE-OAKLAND (WR1774A/DB6)

Date Opened 4/23/14 By (print) TR (sign) Tina Rankin  
 Date Logged in ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) \_\_\_\_\_ YES ☒ NO

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO  
 How many \_\_\_\_\_ Name \_\_\_\_\_ Date \_\_\_\_\_

2B. Were custody seals intact upon arrival? \_\_\_\_\_ YES NO ☒ N/A

3. Were custody papers dry and intact when received? \_\_\_\_\_ YES NO

4. Were custody papers filled out properly (ink, signed, etc)? \_\_\_\_\_ YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) \_\_\_\_\_ YES NO

6. Indicate the packing in cooler: (if other, describe) \_\_\_\_\_

☐ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None  
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: \* Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) 5.4

☐ Samples Received on ice & cold without a temperature blank; temp. taken with IR gun

☒ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? \_\_\_\_\_ YES ☒ NO

If YES, what time were they transferred to freezer? \_\_\_\_\_

9. Did all bottles arrive unbroken/unopened? \_\_\_\_\_ YES NO

10. Are there any missing / extra samples? \_\_\_\_\_ YES ☒ NO

11. Are samples in the appropriate containers for indicated tests? \_\_\_\_\_ YES NO

12. Are sample labels present, in good condition and complete? \_\_\_\_\_ YES NO

13. Do the sample labels agree with custody papers? \_\_\_\_\_ YES NO

14. Was sufficient amount of sample sent for tests requested? \_\_\_\_\_ YES NO

15. Are the samples appropriately preserved? \_\_\_\_\_ YES NO ☒ N/A

16. Did you check preservatives for all bottles for each sample? \_\_\_\_\_ YES NO ☒ N/A

17. Did you document your preservative check? \_\_\_\_\_ YES NO ☒ N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? \_\_\_\_\_ YES NO ☒ N/A

19. Did you change the hold time in LIMS for preserved terracores? \_\_\_\_\_ YES NO ☒ N/A

20. Are bubbles > 6mm absent in VOA samples? \_\_\_\_\_ YES NO ☒ N/A

21. Was the client contacted concerning this sample delivery? \_\_\_\_\_ YES ☒ NO

If YES, Who was called? \_\_\_\_\_ By \_\_\_\_\_ Date: \_\_\_\_\_

## COMMENTS

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### Polychlorinated Biphenyls (PCBs)

Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3520C
Project#:	WR1774	Analysis:	EPA 8082
Field ID:	EQUIP-BLANK	Sampled:	01/23/14
Matrix:	Water	Received:	01/23/14
Units:	ug/L	Prepared:	01/28/14
Diln Fac:	1.000	Analyzed:	01/29/14
Batch#:	207488		

Type: SAMPLE Lab ID: 252455-026

Analyte	Result	RL
Aroclor-1016	ND	0.49
Aroclor-1221	ND	0.98
Aroclor-1232	ND	0.49
Aroclor-1242	ND	0.49
Aroclor-1248	ND	0.49
Aroclor-1254	ND	0.49
Aroclor-1260	ND	0.49

Surrogate	%REC	Limits
TCMX	82	39-122
Decachlorobiphenyl	72	27-120

Type: BLANK Lab ID: QC725684

Analyte	Result	RL
Aroclor-1016	ND	0.50
Aroclor-1221	ND	1.0
Aroclor-1232	ND	0.50
Aroclor-1242	ND	0.50
Aroclor-1248	ND	0.50
Aroclor-1254	ND	0.50
Aroclor-1260	ND	0.50

Surrogate	%REC	Limits
TCMX	114	39-122
Decachlorobiphenyl	108	27-120

ND= Not Detected  
RL= Reporting Limit

## Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3520C
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Water	Batch#:	207488
Units:	ug/L	Prepared:	01/28/14
Diln Fac:	1.000	Analyzed:	01/29/14

Type: BS Lab ID: QC725685

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	5.000	4.633	93	60-131
Aroclor-1260	5.000	4.576	92	50-135

Surrogate	%REC	Limits
TCMX	79	39-122
Decachlorobiphenyl	84	27-120

Type: BSD Lab ID: QC725686

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	5.000	4.510	90	60-131	3	37
Aroclor-1260	5.000	4.547	91	50-135	1	51

Surrogate	%REC	Limits
TCMX	82	39-122
Decachlorobiphenyl	83	27-120

RPD= Relative Percent Difference



Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/14
Units:	ug/Kg	Received:	01/23/14
Basis:	as received		

Field ID:	SS_2-2	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-001	Analyzed:	01/27/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	260	12

Surrogate	%REC	Limits
TCMX	92	60-140
Decachlorobiphenyl	49	36-133

Field ID:	SS_2-4	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-002	Analyzed:	01/26/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	112	60-140
Decachlorobiphenyl	82	36-133

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/14
Units:	ug/Kg	Received:	01/23/14
Basis:	as received		

Field ID:	SS_4-2	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-003	Analyzed:	01/27/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	69	12

Surrogate	%REC	Limits
TCMX	108	60-140
Decachlorobiphenyl	48	36-133

Field ID:	SS_4-4	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-004	Analyzed:	01/26/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	128	60-140
Decachlorobiphenyl	89	36-133

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/14
Units:	ug/Kg	Received:	01/23/14
Basis:	as received		

Field ID:	SS_6-2	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-005	Analyzed:	01/26/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	128	60-140
Decachlorobiphenyl	91	36-133

Field ID:	SS_6-4	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-006	Analyzed:	01/26/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	114	60-140
Decachlorobiphenyl	90	36-133

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/14
Units:	ug/Kg	Received:	01/23/14
Basis:	as received		

Field ID:	SS_5-2	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-007	Analyzed:	01/27/14
Diln Fac:	5.000		

Analyte	Result	RL
Aroclor-1016	ND	42
Aroclor-1221	ND	83
Aroclor-1232	ND	42
Aroclor-1242	ND	42
Aroclor-1248	ND	42
Aroclor-1254	ND	42
Aroclor-1260	1,300	42

Surrogate	%REC	Limits
TCMX	136	60-140
Decachlorobiphenyl	90	36-133

Field ID:	SS_5-4	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-008	Analyzed:	01/26/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	126	60-140
Decachlorobiphenyl	97	36-133



Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/14
Units:	ug/Kg	Received:	01/23/14
Basis:	as received		

Field ID:	SS_13-2	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-009	Analyzed:	01/27/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	60	12

Surrogate	%REC	Limits
TCMX	81	60-140
Decachlorobiphenyl	63	36-133

Field ID:	SS_13-4	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-010	Analyzed:	01/26/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	123	60-140
Decachlorobiphenyl	96	36-133

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/14
Units:	ug/Kg	Received:	01/23/14
Basis:	as received		

Field ID:	SS_7-2	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-011	Analyzed:	01/27/14
Diln Fac:	3.000		

Analyte	Result	RL
Aroclor-1016	ND	25
Aroclor-1221	ND	49
Aroclor-1232	ND	25
Aroclor-1242	ND	25
Aroclor-1248	ND	25
Aroclor-1254	ND	25
Aroclor-1260	960	25

Surrogate	%REC	Limits
TCMX	114	60-140
Decachlorobiphenyl	72	36-133

Field ID:	SS_7-4	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-012	Analyzed:	01/26/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	113	60-140
Decachlorobiphenyl	101	36-133

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/14
Units:	ug/Kg	Received:	01/23/14
Basis:	as received		

Field ID:	SS_14-2	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-013	Analyzed:	01/27/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	74	12

Surrogate	%REC	Limits
TCMX	77	60-140
Decachlorobiphenyl	44	36-133

Field ID:	SS_14-4	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-014	Analyzed:	01/27/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	350	12

Surrogate	%REC	Limits
TCMX	93	60-140
Decachlorobiphenyl	61	36-133

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/14
Units:	ug/Kg	Received:	01/23/14
Basis:	as received		

Field ID:	SS_9-2	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-015	Analyzed:	01/27/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	16	12

Surrogate	%REC	Limits
TCMX	128	60-140
Decachlorobiphenyl	92	36-133

Field ID:	SS_9-4	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-016	Analyzed:	01/27/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	127	60-140
Decachlorobiphenyl	105	36-133



Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/14
Units:	ug/Kg	Received:	01/23/14
Basis:	as received		

Field ID:	SS_16-0.5	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-017	Analyzed:	01/27/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	42	12

Surrogate	%REC	Limits
TCMX	74	60-140
Decachlorobiphenyl	42	36-133

Field ID:	SS_16-2	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-018	Analyzed:	01/28/14
Diln Fac:	5.000		

Analyte	Result	RL
Aroclor-1016	ND	42
Aroclor-1221	ND	83
Aroclor-1232	ND	42
Aroclor-1242	ND	42
Aroclor-1248	ND	42
Aroclor-1254	ND	42
Aroclor-1260	3,100	42

Surrogate	%REC	Limits
TCMX	81	60-140
Decachlorobiphenyl	77	36-133

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/14
Units:	ug/Kg	Received:	01/23/14
Basis:	as received		

Field ID:	SS_16-4	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-019	Analyzed:	01/28/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	16	12

Surrogate	%REC	Limits
TCMX	94	60-140
Decachlorobiphenyl	83	36-133

Field ID:	SS_17-0.5	Batch#:	207403
Type:	SAMPLE	Prepared:	01/24/14
Lab ID:	252455-020	Analyzed:	01/28/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	110	12

Surrogate	%REC	Limits
TCMX	86	60-140
Decachlorobiphenyl	43	36-133

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/14
Units:	ug/Kg	Received:	01/23/14
Basis:	as received		

Field ID:	SS_17-2	Batch#:	207458
Type:	SAMPLE	Prepared:	01/27/14
Lab ID:	252455-021	Analyzed:	01/28/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	400	12

Surrogate	%REC	Limits
TCMX	61	60-140
Decachlorobiphenyl	58	36-133

Field ID:	SS_17-4	Batch#:	207458
Type:	SAMPLE	Prepared:	01/27/14
Lab ID:	252455-022	Analyzed:	01/28/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	76	60-140
Decachlorobiphenyl	73	36-133

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/14
Units:	ug/Kg	Received:	01/23/14
Basis:	as received		

Field ID:	SS_18-0.5	Batch#:	207458
Type:	SAMPLE	Prepared:	01/27/14
Lab ID:	252455-023	Analyzed:	01/28/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	160	12

Surrogate	%REC	Limits
TCMX	81	60-140
Decachlorobiphenyl	37	36-133

Field ID:	SS_18-2	Batch#:	207458
Type:	SAMPLE	Prepared:	01/27/14
Lab ID:	252455-024	Analyzed:	01/28/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	260	12

Surrogate	%REC	Limits
TCMX	69	60-140
Decachlorobiphenyl	55	36-133

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/14
Units:	ug/Kg	Received:	01/23/14
Basis:	as received		

Field ID:	SS_18-4	Batch#:	207458
Type:	SAMPLE	Prepared:	01/27/14
Lab ID:	252455-025	Analyzed:	01/28/14
Diln Fac:	1.000		

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	102	60-140
Decachlorobiphenyl	75	36-133

Type:	BLANK	Batch#:	207403
Lab ID:	QC725349	Prepared:	01/24/14
Diln Fac:	1.000	Analyzed:	01/26/14

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	111	60-140
Decachlorobiphenyl	91	36-133

Type:	BLANK	Batch#:	207458
Lab ID:	QC725579	Prepared:	01/27/14
Diln Fac:	1.000	Analyzed:	01/28/14

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	117	60-140
Decachlorobiphenyl	77	36-133

ND= Not Detected  
RL= Reporting Limit



## Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC725350	Batch#:	207403
Matrix:	Soil	Prepared:	01/24/14
Units:	ug/Kg	Analyzed:	01/29/14

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	164.9	157.7 b	96	58-144
Aroclor-1260	164.9	144.8	88	55-146

Surrogate	%REC	Limits
TCMX	103	60-140
Decachlorobiphenyl	68	36-133

b= See narrative

## Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Field ID:	SS_2-2	Batch#:	207403
MSS Lab ID:	252455-001	Sampled:	01/23/14
Matrix:	Soil	Received:	01/23/14
Units:	ug/Kg	Prepared:	01/24/14
Basis:	as received	Analyzed:	01/29/14
Diln Fac:	1.000		

Type: MS Lab ID: QC725351

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1016	<2.938	165.1	167.2 b	101	51-155
Aroclor-1260	263.2	165.1	461.2 b	120	38-155

Surrogate	%REC	Limits
TCMX	97	60-140
Decachlorobiphenyl	55	36-133

Type: MSD Lab ID: QC725352

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	165.8	158.7 b	96	51-155	6	38
Aroclor-1260	165.8	471.6 b	126	38-155	2	55

Surrogate	%REC	Limits
TCMX	84	60-140
Decachlorobiphenyl	47	36-133

b= See narrative

RPD= Relative Percent Difference

## Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC725580	Batch#:	207458
Matrix:	Soil	Prepared:	01/27/14
Units:	ug/Kg	Analyzed:	01/28/14

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	166.6	197.2 b	118	58-144
Aroclor-1260	166.6	189.6	114	55-146

Surrogate	%REC	Limits
TCMX	112	60-140
Decachlorobiphenyl	80	36-133

b= See narrative

## Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	252455	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3550B
Project#:	WR1774	Analysis:	EPA 8082
Field ID:	ZZZZZZZZZZ	Batch#:	207458
MSS Lab ID:	252516-001	Sampled:	01/24/14
Matrix:	Soil	Received:	01/24/14
Units:	ug/Kg	Prepared:	01/27/14
Basis:	as received	Analyzed:	01/29/14
Diln Fac:	1.000		

Type: MS Lab ID: QC725581

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1016	<2.913	165.3	162.8	98	51-155
Aroclor-1260	<1.905	165.3	150.0	91	38-155

Surrogate	%REC	Limits
TCMX	85	60-140
Decachlorobiphenyl	77	36-133

Type: MSD Lab ID: QC725582

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	166.5	159.6	96	51-155	3	38
Aroclor-1260	166.5	158.7	95	38-155	5	55

Surrogate	%REC	Limits
TCMX	85	60-140
Decachlorobiphenyl	83	36-133

RPD= Relative Percent Difference





**Curtis & Tompkins, Ltd.**

Analytical Laboratories, Since 1878





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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 255150  
ANALYTICAL REPORT**

Geosyntec Consultants  
1111 Broadway  
Oakland, CA 94607

Project : WR1774  
Location : GE Oakland  
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
SS-19-0.5	255150-001
SS-19-2	255150-002
SS-19-4	255150-003
SS-20-0.5	255150-004
SS-20-2	255150-005
SS-20-4	255150-006
SS-21-0.5	255150-007
SS-21-2	255150-008
SS-21-4	255150-009
SS-22-0.5	255150-010
SS-22-2	255150-011
SS-22-4	255150-012
SS-23-0.5	255150-013
SS-23-2	255150-014
SS-23-4	255150-015
EQUIP-BLANK	255150-016

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: \_\_\_\_\_

Will S Rice  
Project Manager  
will.rice@ctberk.com

Date: 04/04/2014

### CASE NARRATIVE

Laboratory number: 255150  
Client: Geosyntec Consultants  
Project: WR1774  
Location: GE Oakland  
Request Date: 03/31/14  
Samples Received: 03/31/14

This data package contains sample and QC results for nine soil samples, requested for the above referenced project on 03/31/14. The samples were received cold and intact.

**PCBs (EPA 8082):**

All samples underwent sulfuric acid cleanup using EPA Method 3665A. All samples underwent sulfur cleanup using the copper option in EPA Method 3660B. Matrix spikes were not performed for this analysis in batch 209623 due to insufficient sample amount. No other analytical problems were encountered.



**Curtis & Tompkins Laboratories**  
ENVIRONMENTAL ANALYTICAL TESTING LABORATORY  
In Business Since 1876

2323 Fifth Street  
Berkeley, CA 94710

Phone (510) 486-0900  
Fax (510) 486-0532

Project No: WR1774

Project Name: GE-Oakland

Report Level: ☐ I ☐ II ☐ III ☐ IV

Turnaround Time: ☐ RUSH ☒ Standard

Sampler: Ehsan Raza

Report To: Nate Mullough

Company: Geosyntec Consultants

Telephone: 50-285-2721

Email: N.Mullough@geosyntec.com

### ANALYTICAL REQUEST

Lab No.	Sample ID.	DATE	TIME	Matrix	Water	Solid	Preservative	HCl	H2SO4	HNO3	NaOH	None
1	SS-19-0.5	3/31/14	9:45			X						X
2	SS-19-2		10:00									
3	SS-19-4		10:05									
4	SS-20-0.5		10:20									
5	SS-20-2		10:25									
6	SS-20-4		10:30									
7	SS-21-0.5		10:50									
8	SS-21-2		10:55									
9	SS-21-4		11:00									
10	SS-22-0.5		11:15									
11	SS-22-2		11:20									
12	SS-22-4		11:25									
13	SS-23-0.5		11:40									

ON - HOLD  
PCs

RECEIVED BY:

Pat Murphy  
DATE: 3/31/14 TIME: 1:01 PM

RELINQUISHED BY:

Ehsan Raza  
DATE: 3/31 TIME: 1:01

SAMPLE RECEIPT

☐ Intact  
☐ Cold  
☒ On Ice  
☐ Ambient

Notes:

SS-22 and SS-23  
on hold for possible  
future analysis.

## CHAIN OF CUSTODY

Page 1 of 2

Chain of Custody # \_\_\_\_\_

CAT LOGIN #

255450



# COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 255150 Date Received 3/31/14 Number of coolers 1  
 Client GEOSYNTEC Project GIE-OAKLAND (WR1774A)

Date Opened 3/31/14 By (print) WR (sign) [Signature]  
 Date Logged in 1 By (print) 1 (sign) 1

1. Did cooler come with a shipping slip (airbill, etc) \_\_\_\_\_ YES ☒ NO  
 Shipping info \_\_\_\_\_

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO  
 How many \_\_\_\_\_ Name \_\_\_\_\_ Date \_\_\_\_\_

2B. Were custody seals intact upon arrival? \_\_\_\_\_ YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe) \_\_\_\_\_

☒ Bubble Wrap ☐ Foam blocks ☐ Bags ☐ None  
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: \* Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) \_\_\_\_\_

☒ Samples Received on ice & cold without a temperature blank; temp. taken with IR gun

☒ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? \_\_\_\_\_ YES ☒ NO  
 If YES, what time were they transferred to freezer? \_\_\_\_\_

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are there any missing / extra samples? YES ☒ NO

11. Are samples in the appropriate containers for indicated tests? YES NO

12. Are sample labels present, in good condition and complete? YES NO

13. Do the sample labels agree with custody papers? YES NO

14. Was sufficient amount of sample sent for tests requested? YES NO

15. Are the samples appropriately preserved? \_\_\_\_\_ YES NO N/A

16. Did you check preservatives for all bottles for each sample? \_\_\_\_\_ YES NO N/A

17. Did you document your preservative check? \_\_\_\_\_ YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? \_\_\_\_\_ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? \_\_\_\_\_ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? \_\_\_\_\_ YES NO N/A

21. Was the client contacted concerning this sample delivery? \_\_\_\_\_ YES ☒ NO

If YES, Who was called? \_\_\_\_\_ By \_\_\_\_\_ Date: \_\_\_\_\_

## COMMENTS

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Polychlorinated Biphenyls (PCBs)			
Lab #:	255150	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3540
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	03/31/14
Units:	ug/Kg	Received:	03/31/14
Basis:	as received	Prepared:	04/01/14
Batch#:	209623		

Field ID: SS-19-0.5 Diln Fac: 1.000  
 Type: SAMPLE Analyzed: 04/02/14  
 Lab ID: 255150-001

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	160	12

Surrogate	%REC	Limits
TCMX	100	60-140
Decachlorobiphenyl	67	36-133

Field ID: SS-19-2 Diln Fac: 5.000  
 Type: SAMPLE Analyzed: 04/03/14  
 Lab ID: 255150-002

Analyte	Result	RL
Aroclor-1016	ND	42
Aroclor-1221	ND	83
Aroclor-1232	ND	42
Aroclor-1242	ND	42
Aroclor-1248	ND	42
Aroclor-1254	ND	42
Aroclor-1260	1,300	42

Surrogate	%REC	Limits
TCMX	103	60-140
Decachlorobiphenyl	78	36-133

Field ID: SS-19-4 Diln Fac: 1.000  
 Type: SAMPLE Analyzed: 04/02/14  
 Lab ID: 255150-003

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	360	12

Surrogate	%REC	Limits
TCMX	74	60-140
Decachlorobiphenyl	39	36-133

ND= Not Detected  
 RL= Reporting Limit

### Polychlorinated Biphenyls (PCBs)

Lab #:	255150	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3540
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	03/31/14
Units:	ug/Kg	Received:	03/31/14
Basis:	as received	Prepared:	04/01/14
Batch#:	209623		

Field ID: SS-20-0.5      Diln Fac: 1.000  
 Type: SAMPLE      Analyzed: 04/02/14  
 Lab ID: 255150-004

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	103	60-140
Decachlorobiphenyl	74	36-133

Field ID: SS-20-2      Diln Fac: 1.000  
 Type: SAMPLE      Analyzed: 04/02/14  
 Lab ID: 255150-005

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	103	60-140
Decachlorobiphenyl	90	36-133

Field ID: SS-20-4      Diln Fac: 1.000  
 Type: SAMPLE      Analyzed: 04/02/14  
 Lab ID: 255150-006

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	106	60-140
Decachlorobiphenyl	94	36-133

ND= Not Detected  
 RL= Reporting Limit

### Polychlorinated Biphenyls (PCBs)

Lab #:	255150	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3540
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	03/31/14
Units:	ug/Kg	Received:	03/31/14
Basis:	as received	Prepared:	04/01/14
Batch#:	209623		

Field ID: SS-21-0.5      Diln Fac: 1.000  
 Type: SAMPLE      Analyzed: 04/02/14  
 Lab ID: 255150-007

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	76	12

Surrogate	%REC	Limits
TCMX	101	60-140
Decachlorobiphenyl	63	36-133

Field ID: SS-21-2      Diln Fac: 1.000  
 Type: SAMPLE      Analyzed: 04/02/14  
 Lab ID: 255150-008

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	350	12

Surrogate	%REC	Limits
TCMX	104	60-140
Decachlorobiphenyl	79	36-133

Field ID: SS-21-4      Diln Fac: 1.000  
 Type: SAMPLE      Analyzed: 04/02/14  
 Lab ID: 255150-009

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	108	60-140
Decachlorobiphenyl	92	36-133

ND= Not Detected  
 RL= Reporting Limit

Polychlorinated Biphenyls (PCBs)			
Lab #:	255150	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3540
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	03/31/14
Units:	ug/Kg	Received:	03/31/14
Basis:	as received	Prepared:	04/01/14
Batch#:	209623		

Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC734358	Analyzed:	04/02/14

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	101	60-140
Decachlorobiphenyl	89	36-133

## Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	255150	Location:	GE Oakland
Client:	Geosyntec Consultants	Prep:	EPA 3540
Project#:	WR1774	Analysis:	EPA 8082
Matrix:	Soil	Batch#:	209623
Units:	ug/Kg	Prepared:	04/01/14
Diln Fac:	1.000	Analyzed:	04/02/14

Type: BS Lab ID: QC734359

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	166.7	179.7	108	58-144
Aroclor-1260	166.7	183.2	110	55-146

Surrogate	%REC	Limits
TCMX	108	60-140
Decachlorobiphenyl	93	36-133

Type: BSD Lab ID: QC734360

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	166.7	160.2	96	58-144	11	38
Aroclor-1260	166.7	168.8	101	55-146	8	54

Surrogate	%REC	Limits
TCMX	102	60-140
Decachlorobiphenyl	85	36-133

RPD= Relative Percent Difference



## **APPENDIX C**

### **ProUCL OUTPUT FILES**

UCL Statistics for Data Sets with Non-Detects				
User Selected Options		DATA FROM BOUNDARY OF WESTERN EXCAVATION AREA		
Date/Time of Computation		6/5/2014 5:02:36 PM		
From File		WorkSheet.xls		
Full Precision		OFF		
Confidence Coefficient		95%		
Number of Bootstrap Operations		2000		
BoundaryWest				
General Statistics				
Total Number of Observations		15	Number of Distinct Observations	
Number of Detects		11	Number of Non-Detects	
Number of Distinct Detects		10	Number of Distinct Non-Detects	
Minimum Detect		0.0014	Minimum Non-Detect	
Maximum Detect		0.26	Maximum Non-Detect	
Variance Detects		0.00993	Percent Non-Detects	
Mean Detects		0.0961	SD Detects	
Median Detects		0.069	CV Detects	
Skewness Detects		0.872	Kurtosis Detects	
Mean of Logged Detects		-3.242	SD of Logged Detects	
Normal GOF Test on Detects Only				
Shapiro Wilk Test Statistic		0.836	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value		0.85	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic		0.193	Lilliefors GOF Test	
5% Lilliefors Critical Value		0.267	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level				
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs				
Mean		0.071	Standard Error of Mean	
SD		0.0914	95% KM (BCA) UCL	
95% KM (t) UCL		0.115	95% KM (Percentile Bootstrap) UCL	
95% KM (z) UCL		0.112	95% KM Bootstrap t UCL	
90% KM Chebyshev UCL		0.145	95% KM Chebyshev UCL	
97.5% KM Chebyshev UCL		0.226	99% KM Chebyshev UCL	
Gamma GOF Tests on Detected Observations Only				
A-D Test Statistic		0.251	Anderson-Darling GOF Test	
5% A-D Critical Value		0.768	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic		0.131	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value		0.266	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level				
Gamma Statistics on Detected Data Only				
k hat (MLE)		0.675	k star (bias corrected MLE)	
Theta hat (MLE)		0.142	Theta star (bias corrected MLE)	
nu hat (MLE)		14.86	nu star (bias corrected)	
MLE Mean (bias corrected)		0.0961	MLE Sd (bias corrected)	
Gamma Kaplan-Meier (KM) Statistics				
k hat (KM)		0.604	nu hat (KM)	
Approximate Chi Square Value (18.11, α)		9.473	Adjusted Chi Square Value (18.11, β)	
95% Gamma Approximate KM-UCL (use when n>=50)		0.136	95% Gamma Adjusted KM-UCL (use when n<50)	
Gamma ROS Statistics using Imputed Non-Detects				
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs				
GROS may not be used when kstar of detected data is small such as < 0.1				
For such situations, GROS method tends to yield inflated values of UCLs and BTVs				
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates				
Minimum		0.0014	Mean	
Maximum		0.26	Median	
SD		0.093	CV	
k hat (MLE)		0.621	k star (bias corrected MLE)	
Theta hat (MLE)		0.118	Theta star (bias corrected MLE)	
nu hat (MLE)		18.63	nu star (bias corrected)	
MLE Mean (bias corrected)		0.0731	MLE Sd (bias corrected)	
			Adjusted Level of Significance (β)	
Approximate Chi Square Value (16.24, α)		8.13	Adjusted Chi Square Value (16.24, β)	
95% Gamma Approximate UCL (use when n>=50)		0.146	95% Gamma Adjusted UCL (use when n<50)	
Lognormal GOF Test on Detected Observations Only				
Shapiro Wilk Test Statistic		0.903	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value		0.85	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic		0.171	Lilliefors GOF Test	
5% Lilliefors Critical Value		0.267	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level				
Lognormal ROS Statistics Using Imputed Non-Detects				
Mean in Original Scale		0.0713	Mean in Log Scale	
SD in Original Scale		0.0943	SD in Log Scale	
95% t UCL (assumes normality of ROS data)		0.114	95% Percentile Bootstrap UCL	
95% BCA Bootstrap UCL		0.117	95% Bootstrap t UCL	
95% H-UCL (Log ROS)		1.626		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed				
KM Mean (logged)		-4.047	95% H-UCL (KM -Log)	
KM SD (logged)		1.981	95% Critical H Value (KM-Log)	
KM Standard Error of Mean (logged)		0.542		
DL/2 Statistics				
DL/2 Normal			DL/2 Log-Transformed	
Mean in Original Scale		0.0721	Mean in Log Scale	
SD in Original Scale		0.0938	SD in Log Scale	
95% t UCL (Assumes normality)		0.115	95% H-Stat UCL	
DL/2 is not a recommended method, provided for comparisons and historical reasons				
Nonparametric Distribution Free UCL Statistics				
Detected Data appear Approximate Normal Distributed at 5% Significance Level				
Suggested UCL to Use				
95% KM (t) UCL		0.115	95% KM (Percentile Bootstrap) UCL	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.				
Recommendations are based upon data size, data distribution, and skewness.				
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).				
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.				

UCL Statistics for Data Sets with Non-Detects				
User Selected Options	DATA FROM BOUNDARY OF EASTERN EXCAVATION AREA			
Date/Time of Computation	6/5/2014 5:03:07 PM			
From File	WorkSheet.xls			
Full Precision	OFF			
Confidence Coefficient	95%			
Number of Bootstrap Operations	2000			
BoundaryEast				
General Statistics				
Total Number of Observations	24	Number of Distinct Observations		15
Number of Detects	16	Number of Non-Detects		8
Number of Distinct Detects	14	Number of Distinct Non-Detects		1
Minimum Detect	0.016	Minimum Non-Detect		0.012
Maximum Detect	1.3	Maximum Non-Detect		0.012
Variance Detects	0.137	Percent Non-Detects		33.33%
Mean Detects	0.371	SD Detects		0.37
Median Detects	0.305	CV Detects		0.998
Skewness Detects	1.469	Kurtosis Detects		1.528
Mean of Logged Detects	-1.518	SD of Logged Detects		1.175
Normal GOF Test on Detects Only				
Shapiro Wilk Test Statistic	0.816	Shapiro Wilk GOF Test		
5% Shapiro Wilk Critical Value	0.887	Detected Data Not Normal at 5% Significance Level		
Lilliefors Test Statistic	0.26	Lilliefors GOF Test		
5% Lilliefors Critical Value	0.222	Detected Data Not Normal at 5% Significance Level		
Detected Data Not Normal at 5% Significance Level				
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs				
Mean	0.251	Standard Error of Mean		0.0713
SD	0.338	95% KM (BCA) UCL		0.37
95% KM (t) UCL	0.374	95% KM (Percentile Bootstrap) UCL		0.373
95% KM (z) UCL	0.369	95% KM Bootstrap t UCL		0.432
90% KM Chebyshev UCL	0.465	95% KM Chebyshev UCL		0.562
97.5% KM Chebyshev UCL	0.697	99% KM Chebyshev UCL		0.961
Gamma GOF Tests on Detected Observations Only				
A-D Test Statistic	0.274	Anderson-Darling GOF Test		
5% A-D Critical Value	0.762	Detected data appear Gamma Distributed at 5% Significance Level		
K-S Test Statistic	0.138	Kolmogrov-Smirnoff GOF		
5% K-S Critical Value	0.221	Detected data appear Gamma Distributed at 5% Significance Level		
Detected data appear Gamma Distributed at 5% Significance Level				
Gamma Statistics on Detected Data Only				
k hat (MLE)	1.085	k star (bias corrected MLE)		0.923
Theta hat (MLE)	0.342	Theta star (bias corrected MLE)		0.402
nu hat (MLE)	34.72	nu star (bias corrected)		29.54
MLE Mean (bias corrected)	0.371	MLE Sd (bias corrected)		0.386
Gamma Kaplan-Meier (KM) Statistics				
k hat (KM)	0.553	nu hat (KM)		26.54
Approximate Chi Square Value (26.54, $\alpha$ )	15.79	Adjusted Chi Square Value (26.54, $\beta$ )		15.21
95% Gamma Approximate KM-UCL (use when $n \geq 50$ )	0.422	95% Gamma Adjusted KM-UCL (use when $n < 50$ )		0.439
Gamma ROS Statistics using Imputed Non-Detects				
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs				
GROS may not be used when kstar of detected data is small such as < 0.1				
For such situations, GROS method tends to yield inflated values of UCLs and BTVs				
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates				
Minimum	0.01	Mean		0.251
Maximum	1.3	Median		0.093
SD	0.346	CV		1.379
k hat (MLE)	0.539	k star (bias corrected MLE)		0.5
Theta hat (MLE)	0.465	Theta star (bias corrected MLE)		0.502
nu hat (MLE)	25.89	nu star (bias corrected)		23.99
MLE Mean (bias corrected)	0.251	MLE Sd (bias corrected)		0.355
		Adjusted Level of Significance ( $\beta$ )		0.0392
Approximate Chi Square Value (23.99, $\alpha$ )	13.84	Adjusted Chi Square Value (23.99, $\beta$ )		13.3
95% Gamma Approximate UCL (use when $n \geq 50$ )	0.435	95% Gamma Adjusted UCL (use when $n < 50$ )		0.452
Lognormal GOF Test on Detected Observations Only				
Shapiro Wilk Test Statistic	0.961	Shapiro Wilk GOF Test		
5% Shapiro Wilk Critical Value	0.887	Detected Data appear Lognormal at 5% Significance Level		
Lilliefors Test Statistic	0.155	Lilliefors GOF Test		
5% Lilliefors Critical Value	0.222	Detected Data appear Lognormal at 5% Significance Level		
Detected Data appear Lognormal at 5% Significance Level				
Lognormal ROS Statistics Using Imputed Non-Detects				
Mean in Original Scale	0.253	Mean in Log Scale		-2.464
SD in Original Scale	0.344	SD in Log Scale		1.717
95% t UCL (assumes normality of ROS data)	0.373	95% Percentile Bootstrap UCL		0.373
95% BCA Bootstrap UCL	0.394	95% Bootstrap t UCL		0.429
95% H-UCL (Log ROS)	1.36			
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed				
KM Mean (logged)	-2.486	95% H-UCL (KM -Log)		1.101
KM SD (logged)	1.655	95% Critical H Value (KM-Log)		3.52
KM Standard Error of Mean (logged)	0.349			
DL/2 Statistics				
DL/2 Normal		DL/2 Log-Transformed		
Mean in Original Scale	0.249	Mean in Log Scale		-2.717
SD in Original Scale	0.347	SD in Log Scale		1.975
95% t UCL (Assumes normality)	0.371	95% H-Stat UCL		2.461
DL/2 is not a recommended method, provided for comparisons and historical reasons				
Nonparametric Distribution Free UCL Statistics				
Detected Data appear Gamma Distributed at 5% Significance Level				
Suggested UCL to Use				
95% KM (BCA) UCL	0.37	95% GROS Adjusted Gamma UCL		0.452
95% Adjusted Gamma KM-UCL	0.439			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.				
Recommendations are based upon data size, data distribution, and skewness.				
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).				
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.				

UCL Statistics for Data Sets with Non-Detects				
User Selected Options	ALL DATA FROM OUTSIDE EXCAVATION AREAS			
Date/Time of Computation	6/5/2014 4:50:05 PM			
From File	WorkSheet.xls			
Full Precision	OFF			
Confidence Coefficient	95%			
Number of Bootstrap Operations	2000			
Out				
General Statistics				
Total Number of Observations	47	Number of Distinct Observations	28	
Number of Detects	33	Number of Non-Detects	14	
Number of Distinct Detects	27	Number of Distinct Non-Detects	2	
Minimum Detect	0.0014	Minimum Non-Detect	0.012	
Maximum Detect	0.96	Maximum Non-Detect	0.014	
Variance Detects	0.0536	Percent Non-Detects	29.79%	
Mean Detects	0.17	SD Detects	0.231	
Median Detects	0.076	CV Detects	1.362	
Skewness Detects	2.284	Kurtosis Detects	5.565	
Mean of Logged Detects	-2.831	SD of Logged Detects	1.778	
Normal GOF Test on Detects Only				
Shapiro Wilk Test Statistic	0.705	Shapiro Wilk GOF Test		
5% Shapiro Wilk Critical Value	0.931	Detected Data Not Normal at 5% Significance Level		
Lilliefors Test Statistic	0.238	Lilliefors GOF Test		
5% Lilliefors Critical Value	0.154	Detected Data Not Normal at 5% Significance Level		
Detected Data Not Normal at 5% Significance Level				
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs				
Mean	0.12	Standard Error of Mean	0.0305	
SD	0.206	95% KM (BCA) UCL	0.174	
95% KM (t) UCL	0.171	95% KM (Percentile Bootstrap) UCL	0.174	
95% KM (z) UCL	0.17	95% KM Bootstrap t UCL	0.199	
90% KM Chebyshev UCL	0.211	95% KM Chebyshev UCL	0.253	
97.5% KM Chebyshev UCL	0.31	99% KM Chebyshev UCL	0.423	
Gamma GOF Tests on Detected Observations Only				
A-D Test Statistic	0.303	Anderson-Darling GOF Test		
5% A-D Critical Value	0.803	Detected data appear Gamma Distributed at 5% Significance Level		
K-S Test Statistic	0.0893	Kolmogrov-Smirnoff GOF		
5% K-S Critical Value	0.161	Detected data appear Gamma Distributed at 5% Significance Level		
Detected data appear Gamma Distributed at 5% Significance Level				
Gamma Statistics on Detected Data Only				
k hat (MLE)	0.586	k star (bias corrected MLE)	0.553	
Theta hat (MLE)	0.29	Theta star (bias corrected MLE)	0.307	
nu hat (MLE)	38.67	nu star (bias corrected)	36.48	
MLE Mean (bias corrected)	0.17	MLE Sd (bias corrected)	0.228	
Gamma Kaplan-Meier (KM) Statistics				
k hat (KM)	0.341	nu hat (KM)	32.02	
Approximate Chi Square Value (32.02, $\alpha$ )	20.09	Adjusted Chi Square Value (32.02, $\beta$ )	19.79	
95% Gamma Approximate KM-UCL (use when n>=50)	0.191	95% Gamma Adjusted KM-UCL (use when n<50)	0.194	
Gamma ROS Statistics using Imputed Non-Detects				
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs				
GROS may not be used when kstar of detected data is small such as < 0.1				
For such situations, GROS method tends to yield inflated values of UCLs and BTVs				
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates				
Minimum	0.0014	Mean	0.122	
Maximum	0.96	Median	0.02	
SD	0.207	CV	1.691	
k hat (MLE)	0.504	k star (bias corrected MLE)	0.486	
Theta hat (MLE)	0.242	Theta star (bias corrected MLE)	0.251	
nu hat (MLE)	47.4	nu star (bias corrected)	45.71	
MLE Mean (bias corrected)	0.122	MLE Sd (bias corrected)	0.175	
		Adjusted Level of Significance ( $\beta$ )	0.0449	
Approximate Chi Square Value (45.71, $\alpha$ )	31.2	Adjusted Chi Square Value (45.71, $\beta$ )	30.82	
95% Gamma Approximate UCL (use when n>=50)	0.179	95% Gamma Adjusted UCL (use when n<50)	0.181	
Lognormal GOF Test on Detected Observations Only				
Shapiro Wilk Test Statistic	0.939	Shapiro Wilk GOF Test		
5% Shapiro Wilk Critical Value	0.931	Detected Data appear Lognormal at 5% Significance Level		
Lilliefors Test Statistic	0.111	Lilliefors GOF Test		
5% Lilliefors Critical Value	0.154	Detected Data appear Lognormal at 5% Significance Level		
Detected Data appear Lognormal at 5% Significance Level				
Lognormal ROS Statistics Using Imputed Non-Detects				
Mean in Original Scale	0.121	Mean in Log Scale	-3.683	
SD in Original Scale	0.208	SD in Log Scale	2.054	
95% t UCL (assumes normality of ROS data)	0.172	95% Percentile Bootstrap UCL	0.175	
95% BCA Bootstrap UCL	0.181	95% Bootstrap t UCL	0.197	
95% H-UCL (Log ROS)	0.629			
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed				
KM Mean (logged)	-3.778	95% H-UCL (KM -Log)	0.609	
KM SD (logged)	2.074	95% Critical H Value (KM-Log)	3.695	
KM Standard Error of Mean (logged)	0.312			
DL/2 Statistics				
DL/2 Normal		DL/2 Log-Transformed		
Mean in Original Scale	0.121	Mean in Log Scale	-3.505	
SD in Original Scale	0.207	SD in Log Scale	1.815	
95% t UCL (Assumes normality)	0.172	95% H-Stat UCL	0.381	
DL/2 is not a recommended method, provided for comparisons and historical reasons				
Nonparametric Distribution Free UCL Statistics				
Detected Data appear Gamma Distributed at 5% Significance Level				
Suggested UCL to Use				
95% KM (Chebyshev) UCL	0.253	95% GROS Adjusted Gamma UCL	0.181	
95% Adjusted Gamma KM-UCL	0.194			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.				
Recommendations are based upon data size, data distribution, and skewness.				
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).				
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.				